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HINTS

TO

China and Tile Decorators.

FROM THE ENGLISH OF

JOHN C. L. SPARKES,

HEAD MASTER OF THE NATIONAL ART TRAINING SCHOOL, SOUTH
KENSINGTON, DIRECTOR OF THE LAMBETH
SCHOOL OF ART.

Edited and Revised by an American Decorator,

WHO HAS ADDED DESIGNS OF THE PRINCIPAL BORDERS, ETC., USED
BY THE CELEBRATED WEDGEWOOD, AND A LIST OF
ALL MATERIALS USED IN CHINA AND
TILE DECORATION.

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INTRODUCTION

TO

AMERICAN EDITION.

THE success which has attended our elementary work on the decoration of unglazed pottery induces us to offer our patrons a more advanced treatise, not as a substitute, but as an onward step in the art.

The love of decoration, and the desire to give tangible and permanent expression to that quality of our nature, is universal among mankind.

The ease with which thousands have produced pleasing effects by simple black lines and figures upon unglazed pottery leads them naturally to desire to execute more artistic work in color, on glazed surfaces, over white or translucent bodies, i.e., to the decoration of crockery or faïence, and china or porcelain.

With their characteristic enthusiasm (stimulated by

the Centennial Exposition) our people are beginning to emulate the older nations of the world in their pursuit of this form of art.

The student of art cannot proceed far in his investigations without discovering, that, among savage and nomadic tribes the world over, there is a marked similarity, almost identity, in the form of their rude designs, whether on their war-clubs, bark-cloth, or their pottery.

When this stage is passed, and they become permanently located, then their art assumes a distinctive national character,—an individuality, influenced by the natural scenery of the country, and by religious ideas. Thus we have Egyptian, Grecian,¹ Chinese, Japanese, Moorish, French, English art ; each having characteristics which the initiated recognize at once, however difficult to describe. In no form of art are these national peculiarities more clearly expressed than in pottery decorations.

As the work we now present to the public treats entirely of the methods of work, we may be permitted, in our Introduction, to make a few suggestions relative to the designs themselves.

¹ The publishers of this book are preparing a little work with illustrations on Greek ornament, as applied to Pottery.

If the designs to be painted are selected, we would have the student bear in mind the above-mentioned fact in reference to the different national schools or types of art expression.

Thus if a part of the design of an object, or set of objects, is Egyptian, all should be. If a part is Japanese in its character, all should be, to secure unity and harmony.

Not only should this be borne in mind in regard to the design, but also in the colors, in which as great a difference is manifest.

When an original design is to be made, the artist has a choice as to whether the decoration shall be geometrical, conventional, or naturalistic in its character. Whatever it is to be, let it be well seen mentally, clearly thought out, before it is sketched on the object. The beginner should first make a draught on paper.

The geometrical treatment has been described in our previous work, pp. 26, 27.

The conventional treatment is taking some natural form, as a leaf, branch, or flower, of a particular plant, and changing it to suit the requirements of the particular object upon which it is to be used, without destroying the resemblance so but that it would be readily

recognized. Once having this conventionalized form, it may be repeated without variation as many times as necessary to decorate the object.

This method has always flourished in the best periods of art, and languished in the worst, says Owen Jones.

The naturalistic, as the word implies, is that form of decoration where the artist attempts a literal copy of nature. This is generally very unsatisfactory, and especially so in ceramic art, where the surface is either convex or concave.

If the human figure or animal forms are used, they should only be treated in outline or flatly, without relief by shading, without foreground or distance ; and all appearance of perspective should be avoided.¹ The Greeks understood and practised this.²

Josiah Wedgwood, who was a man of true artistic feeling as well as a practical potter, used very simple

¹ We would suggest that the student should make a study of Flaxman's Outline Designs, a series of which has recently been re-issued in this country by the publishers of this little work. Flaxman, who was the greatest of English sculptors, was for a time engaged by Josiah Wedgwood. The beautiful classical designs on the earliest productions of the celebrated Wedgwood ware were many of them executed by Flaxman.

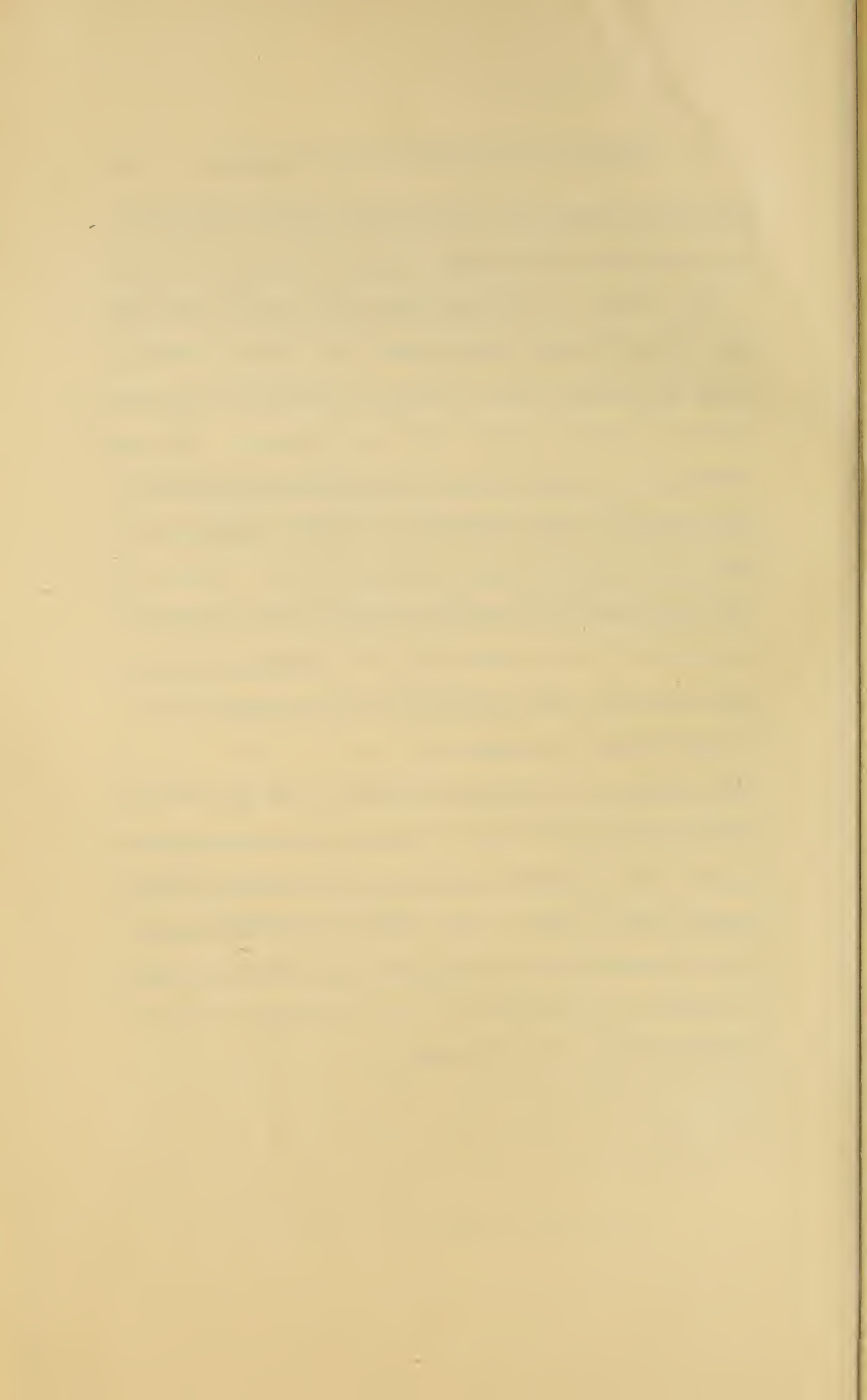
² Designs and Instruction for Decorating Pottery, pp. 32, 33.

and chaste conventional forms and low-toned colors in the decoration of his wares.

The student of Nature, from the artistic point of view, finds in our woods and fields many beautiful forms not yet appropriated by the decorative artist, but which are well adapted for his purposes. As we advance, these forms will undoubtedly be used, and will aid in giving us our distinctive national artistic character.

We may study with profit the lessons the Old World can teach us ; but we must also go to Nature as she has shown herself on this continent if we are ever to arrive at an individual American art.

Believing as we do that the study and practice of ceramic decoration is one of the simplest, most pleasing, and most profitable forms art can assume for the amateur, that it adds to the charms of the home, and fosters the development of pure taste in every other department of household art, we confidently commend this little work to your attention.



INTRODUCTION.

THE singular interest that has been excited in late years in the subject of pottery is at this time bearing remarkable fruit in the shape of a wide-spread effort to produce forms, and surface-decoration on forms, that shall rival those done in such old times as are regarded as being peculiarly rich in artistic light and insight. The rivals to the ancient works are seen daily in increasing numbers and in varying beauty, and of most diverse colors and characters. Scarcely a month now passes, but some addition is made to the number of wares decorated by new methods, which take the impress of the individual minds that have invented them. We thus have had revivals in majolica, faïence, lustered ware, &c.; and with all we may say truly, that as examples of pottery, — that is, more especially in the mechanical and material construction of the new wares, — they greatly exceed the

old ones in perfect finish, durability, and chemical combination of their parts, both in body and in glaze. But this is not every thing ; and it is well known and seen that the ancient works, and those of the Renaissance, excel our own in their taste, artistic freedom, and wealth of ideas ; and in these particulars we have still much to do to equal, still more to do to excel, these Old-World productions of the potter's art.

But the spirit is abroad ; and in all European countries the same active interest in pottery is perceived. Among a large class of amateurs in this country there is a want of practical information on the methods of work in pottery decoration ; and no doubt the absence of this practical knowledge is the reason why so much less china and pottery painting is done by amateurs in this country compared with Germany, for instance.

For these this little handbook is mainly intended ; and the writer will feel well rewarded for his work in putting it together, if it should conduce to the spread of a wider appreciation and practice of the beautiful fictile art, that has from the most ancient times been the object of admiration to legions of persons of taste and of cultivated mind.

HINTS FOR

CHINA AND TILE DECORATION.

AT the risk of saying what nearly every one already knows, it must be made clear at the beginning what pottery is. A pot is a vessel made of clay. Clay is that natural substance produced by the grinding and washing down into hollows, or places where it can settle, of many sorts of rocks ; and as the varieties of rocks are many, so are the varieties of clay. But to take a familiar example : the clay of the fields in the Weald of Sussex or Kent has a sufficient consistency to stick together. Its particles may be moulded with the hands, pressed into moulds, or dealt with variously ; and it is thus plastic by reason of the quantity of water that is in combination with the earthy particles. A flower-pot, for instance, made of this clay, and set aside to dry in the shade, would keep its form and be precisely the same flower-pot as when it was wet, except that it would have shrunk a little. If this

were exposed to the heat of the summer's sun, still more water would be expelled; and the clay from would become harder and closer in texture, and might be used for many indoor purposes, but would not allow of any use that involved the contact with water, as it would still be a mere clay pot. If, however, it were put into a fire, so that so much more of the water was driven out as to change its hardness to that of a tile or a brick, then fluid might be put into it without any risk of its falling to pieces; and, when water has been thus driven out by fire, it does not again enter into combination with the clay, and the vessel remains a piece of pottery forever.¹ Thus the art of so preparing clay, and forming it, and burning it, that it takes a permanent, unalterable form, is that of the potter.

The flower-pot that we have taken as an illustration may be, after firing, white, yellow, red, gray, blue, black, or any or all of these together: that is a condition dependent solely on the clay of which it was made, and the presence or absence of iron or other coloring-matter in the clay.

Now the fired flower-pot has certain characteristics. It is insoluble, somewhat brittle, porous, gives a dry; adhesive sensation to the tongue, and is more or less rough and gritty to the touch, and, on the whole, not

¹ The drying expels the water that is mixed with the clay mechanically; the fire, that which is united with it chemically.

a very useful thing for the higher purposes of life. For many ages all pottery was in this rough, half-finished state ; and it is very doubtful if the Greeks ever, or the Romans up to the age of Augustus, knew any thing of any other pottery. But the remedy for these defects of texture is twofold : one is by skilfully compounding the body, so that it is rendered impervious ; the other is by coating the porous body with a glaze, by which is meant a film of glass. By adopting this latter method, we have the combination that is usually seen in a piece of useful pottery ; namely, a "body" more or less rough and porous, covered with a "glaze," which gives the piece smoothness, a gloss, and renders it quite impervious to moisture.

The first method, viz., that of rendering the body impervious, applies mainly to two kinds of ware,—china, as it is usually called (which is porcelain), and stoneware. Other wares are made impervious by their glaze.

It was a great event in manufacturing industry when it was found that firing a form of clay made it indestructible. It was a second step onwards when a true glaze was discovered. Certainly the potters of Babylon knew the process, as the remains of their tiles show. But many hundreds of years elapsed before the secret was given to the Western world ; and this came either through the Moors by tradition, or was

re-invented by them. In any case, in the ninth century glazed pottery was produced in Spain by the Moorish potters.

Glaze and glass are made out of the same materials. Flint-sand and soda fused together make glass; the addition of metallic oxides gives color, opacity, or a better power of cohesion to glass; and these are precisely the conditions of glaze as applied to pottery.

Here are now two essentials to the proper formation of a useful piece of pottery, — first the body, secondly the glaze. The methods of making and applying these are questions for technical pottery, not for this little work.

Enough to say, that the form as it comes from the kiln, after its first firing, is called “biscuit.” It is then dipped into a creamy-looking mixture, consisting of the various materials which make the glaze, ground to a fine powder, and mixed with water. When the porous ware is dipped into this mixture, a certain absorption of the water takes place, and a deposit of the solid parts of the glaze follows; and the vessel is again fired, when the heat of the kiln reduces these particles of glass to a smooth, shiny, and glossy surface, exactly fitting to the body over which it has been applied.

Leaving stoneware and china out of consideration for the present (although they may, also, be glazed or not), this piece of pottery is what is called earthenware,

and is, in fact, the pottery of the middle ages equally with the pottery of to-day. The red pans and pitchers of the English rural districts are of this construction : so is the ordinary earthenware of our dinner-services. The decoration is of most varied kind ; but the great fact about it is, that the body is an absolute thing, that always influences the colors that are put over it, and which, at the same time, determines the color of the glaze, except when a "slip" of clay, or some opaque substance, is put between the body and the glaze.

A great step onwards was again made, when it was discovered that any common clay, that might be almost or quite like a brick in coarseness, could be coated with an enamel made from tin, which would give a white ground for the artist to work on. This discovery also came from the East, and was developed by the Moors in Spain. Their ware was exported to Italy, where it was used, in the form of circular dishes, to decorate their churches. It was believed that it came from Majorca. The Italians called this ware "majolica," to indicate this real or fancied origin. The exportation was carried on to such an extent, that the finest examples of the ware are or have been found in Italy, not in Spain. The revival of arts and manufactures in Italy in the great fifteenth century had its effect on the potters and their art ; and certain Italian potters re-invented the tin enamel for a covering of the coarse

body they were obliged to use. It is known that the earlier Italian ware is simply lead glazed on the body, and that the change to the tin-enamel system of covering the body took place early in the fifteenth century. Later, towards the end of the century, they imitated the lustre ware so successfully, that they far surpassed their Moorish originals, especially with a certain ruby lustre of Gubbio, which remains a marvel and a delight to artists and collectors to this day. These wares were presents for kings, and were sought after in distant countries, where they moved the ingenious to various efforts at imitation. At any rate, in the course of two hundred years these tin-enamel wares were made in France, Germany, and Holland; and Palissy's troubles, that are so widely known, were doubtless due to his lack of understanding of the proper constituents of the tin enamel, — a piece of information that any potter across the Alps could have given him. This Palissy ware is tin enamel; so, also, is delft; and this was the system generally adopted to obtain artistic pottery; and the ware thus made is called "majolica" in Italy, "delft" in Holland, and "Palissy ware" in France. It may, perhaps, be well to say, that modern English majolica is simply made by the ware being dipped or painted with a colored glaze, which then runs or fuses by the heat of the kiln, and so covers the coarse and hard body; but it is the product of the accidental run-

ning together of the different glazes with which it was covered. The name is a mere trade distinction, and has no relation with the Raphael ware, or other of the Italian Renaissance. On the other hand, "faïence," in its modern signification, is exactly the same as earthenware, and is a French distinguishing name, taken from the wares from Faenza, — not the Italian town, but a town of the same name in the south of France, which produced ordinary ware, simply painted, and glazed afterwards. The Lambeth "faïence" is exactly of this character.

There is a class of pottery distinct from these. It is called "stoneware," and was made in the earliest ages of art. It is one of the undiscovered facts in the potters' history, when stoneware was first made. It differs from every kind of faïence or majolica manufacture in being of impervious body, in which it is like porcelain. It further differs from every kind of ware whatever, in being glazed with the fumes of salt. It differs still further from all other wares, by being fired and glazed and finished in one operation. During its first and only firing, which converts the brittle and useless clay vessel into impervious ware, and when an intense white-heat is reached, salt is thrown into the kiln, either from above, through holes in the crown of the kiln, or into the fire-holes beneath, or into both. The intense heat decomposes the salt, which is changed by the same

agency into a gaseous fume or steam. One constituent of salt, the chlorine, escapes out from the kiln as vapor: another portion, however, the soda, as it flies through the kiln, meets with the white-hot ware, in which is always a portion of silix, or flint, and forms with it a silicate of soda, or soda-glass. This subtle, aerial glazing is thin, transparent, intensely hard, and almost indestructible, and does not coat the finest line or scratch so thickly as to obliterate it. It is on this account, from an artistic point of view, the perfection of glaze. But the disadvantages are numerous. Few colors can stand the trial they are subjected to in the intense heat. The more or less accidental contact of the fire, which has its currents of more or less intense heat streaming through it from the fire-hole to the crown of the kiln, produces various unforeseen effects on the color of the ware and on the color of the pigment used in its decoration. Again: the accidental path taken by the salt in its downward course from the crown of the kiln to the white-hot ware produces great and unanticipated results in the color of the ware, and leads to a bleaching or washing out of even strong colors, such as cobalt, which not unfrequently changes to gray or brown under the excitement of this downpour of chemical matter. Such is the method of glazing stoneware with salt, which has been practised for hundreds of years. The ware produced

by this method was made in Germany, especially on the Rhine, and is now sold by dealers under the name of Grès, or Grès de Flandres. A revival of the principles on which the old Grès was decorated has been made at Lambeth. It is called "Doulton ware," and has justly attained to great celebrity, on account of its fine form, and great harmony of color. The old gray color is to be attributed not only to the clay, but also to the fact that all the old ware was fired with wood as fuel. This, of course, is not the case with the Doulton ware, which is fired with coal: hence the difference in general tone and color from the old Grès. The fifteenth, sixteenth, and seventeenth centuries saw this old Rhenish pottery at its best. It declined, in the beginning of this century, or end of the last, to a mere manufacture of useful articles.

China, or porcelain, is to some extent related to stoneware, inasmuch as the body is completely impervious; but it has a beautiful quality of its own, that is, its transparency. The importation of porcelain from China and Japan in the middle ages was scarcely known; but with the energetic spirit of discovery of the seventeenth century was joined an equally earnest one of trade; and, in consequence of this conjunction, pieces of Oriental porcelain were found in Europe from that time in an always increasing number, until the beauty of the material, more than its exquisite decora-

tion, made its importation into Europe become a real, perceptible demand. This was met by large quantities being sent from the East, but naturally at so high a cost as to stimulate potters to produce a material that would take the place of the imported ware. One by one the potters abroad and at home found out the mystery of the composition of porcelain. It is, of course, made of china-clay, or kaoline, and is glazed with china-stone or "orthoglaze,"—a material that has all the constituencies of true glaze, but found naturally in the china-clay districts. Various accidents, that read like the chance occurrences of a romance, led to the discovery of the true earth; and, one after another, all the countries of Europe had their china-potteries, many of them supported or subsidized by the State or by royal persons. Such were those at Meissen, Sèvres, Chelsea, and others.

To the historian of pottery this discovery was remarkable, chiefly from its influence on the "faïence" or "majolica" wares of Italy and other countries. It caused their abandonment as coarse and heavy; and it retains its supremacy to this day, when, although revivals are numerous, they are in all cases revivals of wares in themselves artistic, and are on this ground interesting. No effort is made to apply these new wares to the every-day uses subserved by our china or modern earthenware productions.

To sum up what has been said, there are these various forms of pottery:—

1. The mere baked clay, such as a brick, tile, or flower pot, called “terra-cotta.”
2. This common material, coated with a film of glass, which may or may not cover colors, called “earthenware,” “faïence,” &c.
3. This common material, coated with an opaque white enamel on which colors may be placed, called “enamelled ware” or “majolica.”
4. Stoneware, an impervious body glazed with salt, such as Grès de Flandres and Doulton ware.
5. Porcelain, an impervious, semi-transparent body, with a pure earthen, non-metallic glaze.

Under one or other of these heads all pottery may be classed.

It is no part of this work to enter into the processes and materials out of which vessels of pottery are made. It will be sufficient to understand that earthenware may be of any clay body, and may range from black to white through every shade of color, and that what the body is, that also is the main color of the ware when glazed; further, that this body is glazed with certain admixture of sand, in which silex, quartz, or felspar are combined with borax and soda, and that this mixture may be the vehicle for the introduction of lead; also that this glaze may be colored with any

of the metallic oxides. This is the majolica of the shops of the present day. The majolica of the Renaissance is this body covered with a glaze which has been rendered opaque and white by oxide of tin or by lime.

The glaze of stoneware has already been described, and the glaze of china also. It is necessary that the painter should know the nature of the body and the glaze.

DIRECTIONS.

In painting a large surface of tiles with any continuous pattern or design, or even when only three or four tiles are placed one above the other,—to form a panel of a fireplace, for instance,—great care is requisite to match them exactly, both for size and color; for, although all the tiles are exactly the same size when they are put into the kiln, the different amount of firing they there undergo causes them to shrink in proportion to the heat they receive; those that are fired most being smaller than those less fired: this necessitates the careful selection from a large number of tiles. Also see that the lines of the sketch are continuous over the lines of junction of the tiles, and that they all meet properly, before you commence to paint.

It is necessary, for comfort and clean work, to take no color on the palette that has not been ground on the glass slab with the muller, and so completely that all grittiness has entirely disappeared. All that should

be done on the palette is the smooth mixing with the palette-knife of the color with the proper amount of the medium that has been selected for use.

Prepared colors do not need grinding on the slab ; but they must be well ground with the palette-knife on the palette.

Keep all color — that on the slab as well as that about to be used on the palette — free from dust : for this purpose, place an inverted saucer over the color when it is not in use. All particles of dust cause small accumulations of color to surround them on the work, and, in firing, are fixed as dark spots. Particles of wool from the wear of carpets and woollen dresses are quite as injurious as grit, and form what is called “lint” in the color.

Scrape the color towards the centre of the palette, and thus avoid the waste and untidiness that is produced by allowing it to run to the edges.

It is wasteful to mix more color and medium than will be needed during the time of work, as, if mixed with oil, it becomes too “fat,” or oily, by standing exposed to the air, and will be quite unfit for use in twenty-four hours.

Keep all brushes scrupulously clean by washing them in turpentine after use, and carefully smooth the hairs to a point before they are put away, in order to keep them even, and in right condition for future use. If

kept in a case or box, it is well to guard against any bending back of the points from pressure, as such an accident will render the brushes useless.

Stipplers, softeners, and dabbers should be washed out in soap and water, as they must be perfectly free from one color before they are used for any other. And it is very difficult to insure this cleanliness with the washing in turpentine only, in the case of such thick brushes.

Be sure that they are perfectly dry before they are used, or the surface of color to which they are applied will be made streaky and uneven.

It is a small matter, but one of great comfort, to have all the sticks for the brushes of good length, and well fitting into the quills.

When sitting to paint, the artist should endeavor to maintain as upright a position as possible: it is the easiest attitude, and one that gives opportunity of making good use of the "rest." Avoid the habit of stooping over the work. Very little fatigue is perceived after a day's work, if this is constantly borne in mind.

It is important, that, in the selection of any piece of ware, a sound piece should be chosen. If flawed, or in any way not quite perfect, there is danger that it may "fly," or break, when exposed to the heat of the kiln; which means that the labor bestowed on the piece is wasted.

Glazed china and earthen ware that has become soiled may be washed in warm water with a little soda before being painted on. When thoroughly dry, the part to be operated on may be wiped over with a little turpentine : it will aid the flattening of the color, and assist the artist in his efforts to "lay" it.

When painting plates or plaques, finish the centre before commencing the border, as it is impossible, otherwise, to avoid rubbing the edges.

The above, in connection with remarks on page 59, are, in the fewest words, the materials that the painter will require. The methods of using them now have to be mentioned.

MANIPULATION.

First, the word "medium" has been mentioned. A medium, in an artistic sense, is any material that will assist the mechanical placing of the colors on the surface to be painted, or will assist or retard the drying of these colors, so as to make their manipulation more easy. With the china-painter a medium has precisely the same office.

As there are two distinct systems of painting, viz., in oil or water, there are two distinct classes of mediums corresponding with these.

Oil medium may be used for over-glaze and for under-glaze work ; water mediums, the same.

Oil medium consists commonly of spirit of turpen-

tine, and turpentine which has assumed a condition of viscosity and thickness called "fat" by the professional painters. It is prepared in the following manner : —

Pour a few drops — about half a teaspoonful — of turpentine into a clean saucer, and let this stand exposed to the air, carefully protected from dust. The spirit evaporates from the liquid in part, and leaves a thickened, sirupy fluid. Add a few more drops of spirit every day, until enough has accumulated for use. This change in the condition of the turpentine cannot be hastened by heat, as exposure to a high temperature causes so rapid an evaporation, that the whole passes off as vapor. The process is much retarded if too much spirit is put into the saucer at one time.

If tube-colors are used, there will be no necessity for this manufacture, as they are prepared with the right quantity of medium mixed for immediate use.

Another medium is spirits of tar. In the same manner as that just described, it, too, may be made "fat." This is used with the ordinary spirit of tar as a diluent, exactly as the ordinary turpentine is used to cause it, in its "fat" condition, to flow more freely.

For under-glaze ware, where there is much absorption, common olive-oil may be used, but is not to be recommended.

In water-color painting on china, any material that will hold the particles of color together will serve for

the purpose of a medium. Gum is the one usually used, and may be added to the color as gum-water, or as a fine powder, which can be mixed with the dry color in proper quantity.

Pottery is colored in many totally different ways. For instance, the body may be tinted to any color within the range of pigment by mixing the pigment with the clay of which the pot is composed. This gives either an even tint or a mottled one; and some of the most beautiful of the Wedgwood and early Staffordshire ware is produced by mixing and pressing, and moulding together, various colored clays or bodies, which are then shaved in a lathe to cut off the surface of these different tints truly.

Another way is to tint the glaze. This, too, usually gives an even tint, but may be made to produce certain pleasing effects by the different thickness of the glaze, which will be darker in parts that are sunk or hollowed. Modelled tiles and plaques are sometimes dipped into colored glaze, when the varying thickness of the glass produces the effect that is sought.

There are, also, the various methods that are distinctly related to the painter's means, inasmuch as the color is applied with a brush. The whole subject of ground-laying is too large to be more than hinted at here; but, among the most practical plans, these may be mentioned:—

It is clearly a tedious, and sometimes a difficult, thing, to lay a flat background between the spaces of some elaborate design, such as a mass of foliage or a geometric pattern.

This may be effected by painting the pattern with a stopping-out composition, composed of gum, or size, and chalk, colored to any convenient tint with ordinary pigment, and then laying on the ground with a large brush, with perfectly flat and even color over every thing. When the vessel thus treated is washed or soaked in water, the stopping-out composition dissolves, and the background alone remains.

Another plan for obtaining a perfectly flat tint is to paint the surface to be colored with medium ; that is, in fat, oil, and turpentine, exactly as a gilder prepares his ground for the reception of the leaf-gold : this preparation, when half-dry, is dusted over with very finely ground powder-color with a piece of cotton-wool, which strews the film of dust perfectly smooth and even.

This method may be used with the last-named stopping-out material.

These manipulations give absolutely flat grounds or tints,—so flat as to be often inartistic. They are, moreover, somewhat intricate, and require considerable practice before they can be done expertly.

The French method is usually followed in English

faïence-painting. It is performed by laying a wash of color mixed with medium as flat as possible with a broad brush ; then the whole surface of the tint is gone over with a flattish, stumpy brush, called by English china-painters, a "dabbler ;" by the French, "Putois."

The process is simple, and requires only care, and steadiness of manipulation.

The tile, plaque, or ornament, is washed over with the color required as evenly and quickly as possible ; then, before it begins to dry, the "dabbler" (which must be perfectly clean and dry) is rapidly and lightly passed over the whole surface by a dabbing, stippling motion, until it presents a uniform smoothness and evenness of tint. It is evident this method of laying a tint is very useful, not only for grounds in conventional designs, but also for skies, the laying-in of landscape masses, and for any clear, even, or graduated tone in flesh or drapery.

Various degrees of softness and smoothness can be attained by varying the consistency of the color employed, and also by continuing the dabbing process until the color is quite dry ; in which case, if done carefully, it becomes very fine and smooth in surface.

It is well to bestow extra care on the mixture of the color with the fat, oil, and turpentine ; so that it will flow easily over the surface of the tile or ornament, and not dry too quickly.

It materially assists the flatness of a tint on a large surface, if a few drops of oil of aniseed are mixed with the color.

PAINTING OVER THE GLAZE.

In painting on china, earthen ware, and all "overglaze" ware with enamel colors, the procedure is as follows:—

The design, of whatever kind,—whether heads, landscape, flowers, or conventional ornament,—must be sketched carefully, on the piece to be decorated, with Indian-ink and a fine brush. This or any other vegetable water-color may be used; or the design may be traced, and transferred to the ware by means of a piece of red transfer-paper, or other similar mechanical contrivance. If tracing is resorted to, it must be done in the following manner: Make a very accurate and careful tracing of the design on tracing-paper with a hard lead-pencil. Place the transfer-paper¹ between this tracing and the tile or plate, and go over each line with a transfer-point,—of metal, ivory, or agate, or hard wood. When completed, and the paper lifted up, there will be found on the tile a red or other outline, which need not be removed when done with, as it will completely disappear in the firing. Let it be carefully noted that no traced outline is so good as to do away with the necessity of drawing the whole design afresh in the color.

¹ Same as impression paper.

Another plan, often made use of, is that of pricking small holes through the tracing-paper wherever there is a pencil-mark: this can be done with a pin or a needle on a green baize table-cover, or any other soft thing underlying it.

When finished, keep the tracing thus treated closely pressed on to the tile, and rub some finely powdered black chalk or charcoal all over it with a lump of cotton-wool, or a roll of flannel or fine cloth. The powder passes through the small holes in the tracing-paper, and leaves a dotted outline of the design clearly visible on the surface of the ware when the tracing-paper is removed. This frail outline can be made more definite and fixed by the Indian-ink outline, or by one of color.

The artist who can draw with facility will have no need of such mechanical contrivances, but will sketch the subject at once in the Indian-ink.

When this is dry, the painting may be begun. Amateur painters will feel some difficulties, no doubt, at the outset: it is therefore, perhaps, necessary to go a little into detail, at the risk of being tedious.

The first great care — and this ought to be printed in Italics — must be to see that the color is thoroughly ground on the slab with a glass muller (unless the artist use the French tube-colors, which are ready mixed and prepared) until every trace of grit has disappeared. A small quantity of oil of turpentine or

water may be used in this grinding. If water is employed, it must be done some hours previous to the painting being done, in order that the color may be perfectly dry, or it will not mix with the oil.

Then mix a sufficient quantity of the required color upon the palette, and add enough turpentine and fat oil, or other medium, to render it of proper consistency.

It is at this point that those artists who are painting for the first time on china find a difficulty in their way. And it is really not easy to explain in words the exact quantity of medium necessary ; and, after the most elaborate explanations, it can only be learnt by experience.

However, some hints may be useful, as some simple tests may be applied to save the bad consequences, which are sometimes irremediable after the piece is fired.

Therefore notice, if, after the color has been laid on, it dries very slowly, and presents a very shiny appearance, or shows a tendency to flow over the outline : if so, the artist may feel sure that too much of the thickened turpentine, or "fat" as it is called, has been added to his color. Should the piece be sent to the kiln in that condition, the probable consequence would be, that the color would "boil up," as it is commonly described, and present, instead of a smooth, glassy surface, a series of rough bubbles or excrescences, which would require to be scraped off, and necessitate the repainting of the design, at least in part.

If, on the other hand, the color as mixed on the palette is difficult to lay on smoothly, dries very quickly, and looks dull and rough afterwards, it shows that too small a quantity of "fat" in the medium has been used: and although the consequences of this error, so far as the firing is concerned, are not serious, yet it will be almost impossible to get the painting into a good state for finish; for the color of the second painting, coming over this unkindly surface, is likely to remove some of it, or, at any rate, to prove stubborn, and look rough and uneven.

Now, when the color is proved to be of the proper consistency, the brush must be well and evenly charged with it, and passed over the surface of the piece broadly and quickly, keeping the hairs spread, and in a flat position as much as possible.

When the first wash of color has been laid over the design, it must be left until quite dry, before any attempt is made to shade it, or deepen the tint in any way.

Should the first wash of color not appear sufficiently smooth or even, however, the brush may be freed from color, and passed gently and quickly over the whole surface while still quite wet, for the purpose of smoothing out the ridges or wrinkles of color which the edges of the brush may have left on it.

As soon as this first tint is perfectly dry, another

may be laid on it, and again left to dry ; and, when the design has been in this way completed in its various stages of shading toward finish, an even outline may be added throughout the whole painting, usually of a shade of color darker than the average tint of the design. This outline gives definition and vigor to the painting, and gives a certain relief to it. A long-haired brush, called an "outliner," is used for this purpose.

If a tinted ground is required to any floral, conventional, or other design, as is frequently the case, it may be laid in the manner prescribed previously, by the process of dabbing, after the design has been sketched in with India-ink. But as it is almost impossible to avoid dabbing over a part of the design, or, indeed, sometimes over most of it, should it be at all intricate or closely filled in, it is wise to make the ink outline very clear and distinct. If this is attended to, the dark outline can be distinguished with sufficient clearness through the dabbed ground, even when quite dry. When this is the case, the superfluous color can be carefully scraped off with a penknife, thus leaving the ground-tint only where it is required, while the design is simply the clear white of the tile, or color of the body of the ware, ready for painting.

It stands to reason, that, if the outline has been pounced through the tracing-paper, it must be gone over with the strong Indian-ink outline before the

grounding process commences, otherwise it would be completely lost in the dabbing.

All these difficulties could best be met, in the case of a beginner, by practice with one color, such as common red : it is a very easy color to lay on the ware, and is, on this account, a good pigment for the purpose.

A six-inch tile may be used : on this sketch a design, or a spray of foliage ; then attend carefully to the points already mentioned, such as the grinding and mixing of color, and lay on a pale tint over every part of the design ; allow it to dry, and then put in the shadows broadly, with a deeper tint of the red, remembering to hold the brush so that it works into a flat position, to avoid ridgy lines and brush-marks. When this is dry, the finish may be added with the outline, and the tile may be laid aside in some spot free from dust, to dry thoroughly before it is sent to the kiln. Some practice with colors not to be fired may be desirable.

In painting flowers and foliage on china or earthen ware, the same general plan has to be observed. For such a subject, prepare a palette with a small quantity of these colors, viz., orange, green, blue, and brown, and commence by putting in the lightest tints of the leaves first, wherever they are required ; such as the gray-blue of a shiny leaf when seen in the light, or the bright warm yellow of the same leaf when the light passes through it. Always put the lightest first. Tone

the green with orange for a yellowish green, and with cobalt if a colder tone of green is required.

It is best not to go over the whole of the leaf with this lightest color, but to put the tints down clearly where you see them in your copy, or in the natural leaf that is being imitated, leaving the rest of the leaf free for whatever color it possesses. Care must be taken to avoid making a ridge or a strong mark where the different tints meet. This can be managed by not letting the colors quite meet, and by taking care that they are not too wet. When the whole surface of the leaf has been covered in this way, it must be left to dry.

To avoid delay, a clean palette may be taken, and "set" for the flowers, and the first or lightest wash laid on thinly in the usual manner. For the highest shining lights the china may be left clear, the color being, of course, softened to nothing as it approaches the light, unless the petals are very shining. It is, perhaps, less difficult to paint them all over with the palest tint, and finally, when the color is quite dry, to take out the high lights with a penknife.

While the first wash on the flowers is drying, the artist may return to the leaves, which, if quite dry, are now ready for shading.

The proper shades of brown, olive-green, &c., for this purpose, may be easily obtained by judiciously mixing the necessary colors ; for instance, deep olive-

green can be made by mixing green, orange, brown, and red.

Grays of different shades are made by brown and blue ; or brown, blue, and green ; or brown, blue, green, and pink. Put these on in very faint washes.

For the serrations of the leaves, the stems, and general finishing, purple-brown is in many cases very useful. It also serves as an excellent outlining color, either alone or mixed with common brown.

In painting birds, which are frequently added to the semi-naturalistic treatment of faïence in the present day, to give interest to the composition, it is well, after the sketch in Indian-ink has been finished, to draw in the bill, eye, wings, and feet with care, with black, brown, and gray. The washes of color most resembling the natural mass of tints may then be laid in, and left to dry perfectly, before the details of the plumage are put in, and the finishing touches added.

The same advice applies to butterflies, which are useful as bringing points of strong color into a design, when this is done with judgment and taste. These require but few colors, and are, for the most part, quickly observed and painted.

In painting a head, commence, as usual, by the careful outline in Indian-ink. Let every detail be thoroughly drawn in this material before beginning the enamel color.

Allow of no appearance of carelessness or erasure, or uncertainty in form, to make itself visible in this stage, as all such imperfection runs great risk of being much increased in the final drawing.

If the head be on a round plaque or plate, and it is thought useful to have a background, it is best to lay it in at once, before beginning to color the face. The arrangement, color, and design of this background, is, of course, dependent on the taste of the painter. In general, drapery or foliage may be used with good effect ; or it may be simply grounded with some color that will either harmonize or contrast with the prevailing tones and style of the head ; or some diapered or tapestry design may be worked over it in self-tones or in contrasting ones.

In all cases remember that a background is a thing to be behind the head, and should, therefore, be clearly a secondary feature in the picture. Detail, however neatly drawn, should be sacrificed to this great necessity. Another point is, that the background should, for decorative effect, be either darker or lighter than the head-tone, so that the head detaches well, and does not "swim" in the background.

The colors used for the face are pale tones of yellow for the lights and lightest parts, flesh-red and yellow-brown for stronger local color, with more flesh-red for the cheeks.

As before, proceed by laying in large washes of color ; and, when these are dry, the shadows can be deepened, and the middle or half tones properly graduated, and the whole harmonized. Here, again, purple-brown may be used with good results in drawing the lips and nostril over the tones of red that have been used for them.

The hair may be laid in broadly with the required color, and a softener or dabber used whenever required.

Remember that flat tints, made so at once in the first wash, are to be preferred to those rendered artificially flat by stippling.

Drapery, also, must be painted broadly and simply : the lights are, perhaps, the best to begin with, then the local color, then the deep half-tone and the shadow.

Be quite sure that the shadow of a colored drapery is not the deepening of the local color ; that, for instance, blue drapery in folds is simply graduated blue : it is not, but is a color that constantly changes towards a neutral value of blue, frequently towards brown, and, it may be, to violet.

Skies are, of course, laid in on the same general principles as those above mentioned. Be careful not to make the grays too cold, as there is sometimes a tendency in them to darken, and turn towards a green tint, in firing, that is disagreeable.

Blue, brown, and pink, mixed in varying proportions, produce grays. Be careful of the edges of clouds, to see that they are well drawn, and not too hard ; and use a flat brush, with but little color in it, to improve these edges. A little green with the blue will give the steady look of Nature's blue sky, and remove the porcelain effect of the cobalt alone. All these works, painted in enamel on or over the glaze, may be fired more than once ; and indeed, in the finer kind of soft enamel-work, twelve firings are not uncommon. But, although a second and even a third firing may be useful, there are risks of the fading of colors from repeated fires, that render it undesirable that that number should be exceeded.

Still it gives the artist confidence to remember that the second painting will take the finish, and he may, therefore, with confidence lay in large washes of all his tones for harmonious working together in his second or even third painting and firing.

The artist will not feel any great difficulty in the unlikeness of the pigment when it is put on the ware to the color it will develop into in the kiln, as, with the exception of cobalt and pink, the colors appear very much the same on the palette and on the ware when fired.

A final caution is necessary to those who have had but little experience in this work : it is to see that the

pigment is put on to the ware in proper quantities from the brush. A line or tint may seem well covered, and yet burn away in the kiln, if it is not laid in with sufficient pigment to resist the heat: another tint may scarcely look darker on the ware, and yet come from the kiln opaque and heavy, from having been overloaded with pigment.

The above directions may also be followed, if water with a little gum is used as the medium, instead of turpentine.

PAINTING ON THE "BISCUIT," OR UNDER THE GLAZE.

The term "biscuit," as has been before explained, is applied to the ware in its unglazed condition. There are as many varieties of "biscuit" as of pottery-ware; and they vary in texture, smoothness of surface, and powers of absorption, almost infinitely. In fact, all ware that is glazed by a second operation is at one stage of its manufacture in a state of biscuit. The art of coloring upon this ware is somewhat different from that of over-glaze ware. The colors are harder, not in themselves glossy, but take their full development from the glaze that is placed over them, which gives them softness and transparency, and a mellowness that is not reached by any over-glaze colors at present in use.

The biscuit is of dull, porous surface, of any color

that the clay of which it is made will develop in the kiln, and may be any thing from white to black.

It takes the mark of a lead-pencil or a piece of charcoal easily, and is not unlike fine drawing-paper to work on.

Here, too, either water or oil may be used as a medium. If oil is selected (and it is the more useful), then the ware must be sponged over with some material that will render it less porous, and give a more convenient texture for the brush to work on: it also renders it smooth and soft by removing the harshness of the dull, raw, absorbent surface.

This is effected by rubbing the surface of the ware with ordinary size or treacle (golden sirup), or a solution of gum-tragacanth.

If, however, water is used as a diluent for the colors, then it is not necessary to stop the absorption of the piece; but some of the size or gum-arabic must be mixed with the color on the palette instead.

When turpentine or tar is used as a diluent, the "fat" oil is employed as a medium, in the same manner as in painting over-glaze on earthenware or china. It will be found, in general, that a larger quantity of fat oil will be necessary with the under-glaze colors to make them work smoothly and easily. As there is not the same danger of "boiling up" to guard against in this case as in over-glaze painting, the medium may be

used as freely as is desirable, without any ill effects resulting.

The directions for the actual application of the color to the ware that have been already given in the enamel-painting instructions will apply equally to the painting on the "biscuit," and therefore need not be repeated here.

Dabbing, however, cannot be resorted to with the same ease, as the color is apt to dry before it has been wrought into smoothness. To render this difficulty less embarrassing, care must be taken, in the first place, to have the ware well sized ; in the second, mix plenty of fat oil with the color, lay it on rapidly, and use the dabber very quickly over the whole of the colored surface. It is an advantage to use rather a stiffer dabber than for over-glaze. Grounds may be moderately well laid with a large brush, without the dabbing process at all : it is only necessary that the color should be well mixed, and have sufficient fat oil to render it easy of application, and to allow it to run together slightly.

Great care must always be taken, in painting on the biscuit, to prevent any color spreading too far, as it is very difficult to efface any color-marks from the ware in this condition. A tint that is found to be too dark may be lightened by rubbing off the surface-color with a rag or sponge moistened with turpentine ; but the ware can never be thoroughly freed from color when once worked over.

In painting flowers on the biscuit, or under the glaze, the beginner will experience a considerable amount of difficulty from the fact that most of the colors used for this work do not bear the least resemblance to the tints they represent before firing.

For instance, a deep-blue, such as cobalt, appears, in its state of powder, a brownish gray; a turquoise-blue resembles slate-color; and so on: thus the artist must rely on his knowledge of the pigments, and draw a little on his imagination, in order to realize, and then carry out, his ideas respecting the colors and grays of his flowers. It is well to keep the pots or packets of color distinctly marked, and also note what colors are on the palette.

In general, the tint of the ware to be painted on is lower than white in tint, usually of a warm gray, and deep enough in tone to cause opaque white enamel to appear in bright relief upon it. This white enamel bears the same relation to enamel-painting that opaque-white does to a water-color drawing. It requires to be put on thickly, so that it stands up on the surface of the ware, or has an *impasto*, to use an artistic term. Care must be taken not to render it too liquid, or saturate it too much with the fat oil, as, under such conditions, it may run down the surface of the ware, and blur or destroy the outline.

It is used for high lights, and must be applied care-

fully and thickly. In order to do this, have the color on a clean palette, thoroughly mixed ; add a little fat oil to make the mass smooth, but not enough to render it liquid. Take a clean, dry brush, and dip only the tip of it into the mixture, taking up a small piece at a time, which transfer quickly on to the part requiring it. Never allow the brush to get soaked with the enamel, which clogs it, and prevents its working smoothly and finely.

The green that is made of claret-brown, common brown, and black, must be put on rather thickly, as it fires out to a great extent.

A fine olive-green is made with green, orange, and claret-brown ; a purple, with two parts of manganese-brown, and one of cobalt.

As the mode of painting flowers on the biscuit differs very little from that in use for their application to china or earthen ware, a repetition of the methods need not be made. Any errors in the laying-on of the color bring about similar results in both cases. If the colors are put on too thinly, they fire out ; if too thickly, they will not take the glaze, and look dull in consequence : sometimes they will even blister, and they are always heavy and dry.

In painting heads on the biscuit, it is well to remember how important it is to have an accurate drawing, which may be made with pencil or charcoal, or with lithographic chalk, on the tile or plaque.

The background is next to be laid on as far as possible. No definite directions can be given as to style and color of the background; for it depends on the artist's feeling and taste. It may, of course, be a sky of any tint, distant landscape, foliage, or drapery, or any thing else; and may be a simple flat wash of color, or an evenly graduated tint of two colors. The points to be aimed at are such a harmony of color as may agreeably assist the color of the head.

The flat tints already noted may be used for these background tones, such as the turquoise-blue flat tint, which, with a darker pattern of dark-blue running over it, would contrast with a strongly-painted head.

The olive-green above mentioned may be very effectually used, also the purple, made with manganese and cobalt.

When this is laid in, wash in the large tints of the hair and drapery broadly and quickly, and then leave them to dry.

It is to be remembered that biscuit, when dipped in glaze, and fired successfully, comes from the kiln a piece of glazed ware, which can be used as a basis of a complete system of over-glaze or enamel-coloring afterwards. This gives the artist a double chance of obtaining his ends; as the softness of the under-glaze effects is secured by the first firing, while the colors not applicable to this system are applied afterwards over

the glaze, always, however, with a certain loss of brilliancy and clearness in the glaze and colors.

In working at the face, two different plans have been adopted. Some painters on the biscuit find it best to put in only the shadows of the face for the first firing, reserving the flesh-tints for the second painting with enamel or over-glaze colors, of which there is a great and almost perplexing variety. Others put in not only the shadow, but also the flesh-color at once, modelling them with darker tones, and dabbing or stippling them together while they are wet, until the proper forms have been developed.

Heads painted on the biscuit almost invariably require two firings at least: therefore finishing touches are not usually or necessarily put into the first painting. It is always well, however, to do as much as possible for the first firing, in order to preserve the general tone and quality of the piece.

The second painting, being done with over-glaze or enamel-colors, is fired at a lower temperature than the glaze: it often has the disadvantage of dimming the lustre of the first glaze a little, as has already been remarked.

For under-glaze work, the shadows and general modelling of the face may be of manganese-brown, which fires to a warm, reddish tint: it is very easy of manipulation, "lays" itself flatly, and is graduated to a soft-

ened, imperceptible edge without difficulty. It may be laid in strongly, as somewhat is lost in firing.

An under-glaze flesh-tint may be made of claret-brown ; and the same, mixed with common brown for shadows, may be used with good effect. It must, however, not be put on strongly, or the face will appear too red.

Always outline a head clearly and strongly for the first firing. Great care is here necessary, as the drawing of the head depends on this part of the work,—in every part of each curve and line being well formed : every detail of the features may also be outlined, but less strongly. Common brown or manganese-brown will serve for this part of the work.

If the outline fires out at all seriously in the under-glaze kiln, as is sometimes the case, it must be re-applied of the same tint in enamel-color.

Gilding has already been mentioned : it is always applied over the glaze.

The foregoing remarks on under-glaze and enamel-painting apply, as to the processes and the colors named, to earthenware principally ; for the china body is not only in itself harder than earthenware, but has a harder glaze, with which many enamel-colors have so little in common as to almost fail to adhere, and certainly frequently are found to look far from rich and glossy.

LINING.

Plates, vases, cups, and many other things, require to be finished off with lines around their edges or their mouldings, or between any divisions of their forms. It is done upon a whirler or table-wheel, something like a potter's wheel, which is a round slab moving freely on a pivot. The plate or vase is placed exactly in the centre of the horizontal circular slab. The operator then, with his right arm leaning upon the wooden rest at his painting-desk, to insure perfect steadiness, applies a brush charged with the required color to the edge of the piece to be decorated, slowly moving the wheel with the piece on it with his other hand. By this simple means, a line of any fineness or breadth can be made.

FIRING.

A few words about kilns may be interesting.

With the kilns of the potter we have nothing to do, more than to remark that they are of every shape and inclination with the ground, from vertical to horizontal ; that they are of all sizes, from three or four feet in diameter to twenty-four ; that they are being varied in construction every day by skilful potters, to obtain better results for the fuel they consume.

The pottery-painter receives his biscuit or glazed ware, in more or less perfect condition, from these kilns.

With those in which his work is fired he has more concern.

They are all on one principle. A fireclay box is constructed: the fire is made underneath or at the side, and has flues, by which the heat circulates around the box until the required heat has been reached. The principle to be observed is, that the fire has no sort of direct impact on the painted ware: on the contrary, a crack in the kiln is often very destructive, as it allows sulphur from the fuel to find access, to the serious damage of the colors, which are blackened by it.

These fireclay boxes may be of one piece, such as the little kilns that dentists use for fixing the coloring of artificial porcelain teeth, or may be built up elaborately, so as to be twelve feet deep and six or eight high. In all these cases, the fire is kept carefully from the contents of the muffle, as it is called; and the heat of the fuel is communicated to the ware through the walls of the inner box, so that the whole becomes a glowing mass of red heat. The filling of the kiln is a matter with which the professional potter is more particularly concerned, but various props and pillars and slabs, forming floors to little horizontal divisions, are used and built up inside the muffle with the ware to be fired, and considerable ingenuity is shown in the close packing necessary in these kilns. When the fire is lighted, the heat is allowed very slowly to penetrate the

mass of fire-clay of the muffle and its contents ; and it is sometimes not allowed to attain its full heat for a whole day, and even more, when the bulk of the kiln and contents is considerable. The door of the kiln is either an iron plate, inside which a firebrick wall is built, or not, according to the size of the kiln : through this door a hole is made, which is covered with a lid or a stopper ; and through this the "tests" are drawn from time to time. Carmine is a color composed of gold and tin and silver. In the progress of the development of this pigment in the kiln, from its raw state to its full beauty, certain changes go on ; for at the beginning of the fire, when all is at a low heat, the silver predominates, and the red is feeble ; a dirty, dark-yellow tint being the prevailing color. At the proper point, the carmine is in full power in all its beauty. With an over fire, the silver is destroyed ; and the result is, the carmine becomes cold in color, inclining to lilac or violet. This is the reason why the "test" is made of carmine. It is simply applied. Small pieces of ware, such as a broken tile or plate, are painted with a brushmark of carmine, and have a piece of wire twisted around them, so that they can be easily seized with a hooked rod. These are placed in different parts of the floor, — that is, opposite to the hole in the door that has been mentioned, — and are brought out from time to time as the kiln approaches its full fire, until it is seen that the

color is fully developed. When this is the case, the fire is raked out, and the kiln allowed to cool slowly. Any sudden accession of cold air to the hot pieces is to be carefully avoided, as it has the effect of at least causing the glaze to "craze," that is, crack all over in small cracks. This is due to the different textures of the body and the glaze. They have different rates of receiving or giving out heat: so all must go on slowly together, to keep them sound. A very violent admission of cold to any hot kiln may break the vessels themselves.

The firing of patterns painted on the biscuit, or under the glaze, is somewhat different when painted in oil: the pieces have to undergo a slight firing up to dull red heat, to expel the oil, and dry up all greasiness from the turpentine. This is called the "hardening on" kiln, and must precede the dipping of the pieces in the glaze tub; for as the glaze is mixed with water, and the surface of the painted ware is greasy, no contact between the two would be possible, until the greasiness is first burnt out. The body of any piece must be more or less absorbent when it is dipped, in order that a certain quantity of the solid part of the mixture should adhere to the body of the pot. This is instantaneously done by the absorption of water from the mixture which separates from the glaze closely surrounding the piece in the tub, and which, in effect, coats the vessel with a film of glaze in moist powder.

REQUISITES.

The requirements of a china-painter are not very numerous. A table of convenient size and height (from two to four feet square is most convenient), well arranged with regard to light, is necessary. The light should be ample and high, extending from the level of the table upwards. It is sometimes more convenient to work with the light in front, sometimes better when the light comes from the left hand.

The rest is a narrow piece of wood of any convenient length (eighteen inches is, perhaps, most useful), and two or three inches wide, with two blocks the same width as the strip, and two or three inches in depth, fixed, one at each extremity. This is simply laid on the table, and, as it bridges over the ware that is being painted on, supports the wrist, and is convenient, as it can be moved to any position, and over any part of the piece that it covers.

The rest is invaluable for steadying the hand, especially in outlining, or in any part of the work where even, carefully-placed lines are required. The tile, plate, or ornament should be held in the left hand, just underneath the level of the rest, so that the brush may come down steadily upon it, guided by



the right hand, which, of course, is perfectly steady on its support.

A mahl, or maul-stick, will be needed when painting on large tiles, or plaques, that may be used for wall decoration. These must be set up against a wooden support, and worked at in the same manner as a painting on canvas.

In decorating large vases, also, this mahl-stick will be quite necessary.

A glass slab for grinding the colors on. This is usually made of thick plate-glass let into a wooden frame, and bedded with plaster-of-Paris to a true and firm basis. It is thus protected from chance blows, and is perfectly secure against any uneven pressure from the muller.

Some glass mullers for grinding the color. Three sizes will be convenient. The smaller ones serve for small quantities of color. These will not be necessary when the prepared colors are used.

Some earthenware palettes, as well as six-inch tiles, for the color, will be needed, and two or more strong palette-knives.

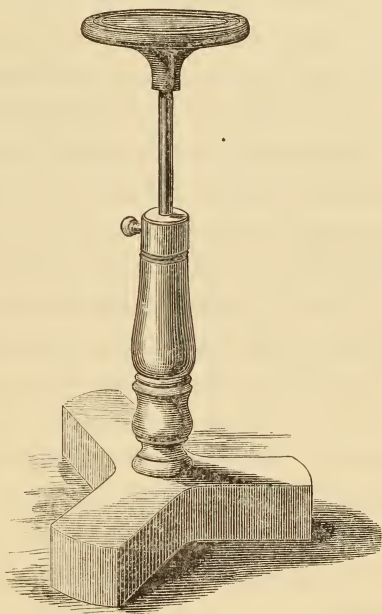
For painting in water-color, the pigments must be used in the form of powder, ground in water as a medium, with a drop of gum-arabic added.

Brushes are a very important part of the china-painter's outfit. He will require several, of different sorts and sizes :—

1. A fine-pointed camel-hair, for sketching or outlining the design.
2. Two or three good brushes of different medium sizes, for laying in the first washes of color.
3. Some shaders.
4. Outline-brushes of different sizes.
5. A softener of badger-hair.
6. Dabbers, for laying grounds, skies, and all large flat tints.

For working in water-color, brushes made of red or black sable are the best. For working in oil, camel or marten hair will be found most suitable.

It is very desirable to have different sets of brushes for working in water and in oil ; for although, by thorough washing in warm water with soap, a brush that has been used in turpentine may be cleaned from it, and so be made serviceable for working in water, it



is scarcely ever fit to be used again for painting in oil, as the hairs become dry and harsh, and seldom work up to a point properly after this process.

A table-wheel, for describing circles and curves, and for lining the edges of plates, rims and mouldings of vases, and other uses, must be added to the list of requisites. It is a horizontal circular slab, so placed on a pointed iron rod as to spin or whirl easily and truly when turned with the hand. It stands firmly on a framed base or foot, and is somewhat solidly constructed, for the purpose of being steady while in use.

Many other things connected with pottery could be written about; but the limits of this small work prevent even an allusion to them. The small part of the subject that has been here considered is in itself so interesting, that it is difficult not to attempt to enlarge it at all sections of this handbook, until it should be a work worthy of the art of pottery; but that is impossible.

A recent writer¹ says, "It is no very easy thing to make intelligible to those who have no love for pottery, who take no delight in curious and beautiful pieces of china and earthen ware, how it is that very many of their fellow-mortals—not altogether despicable persons—are possessed of an enthusiastic liking for these things."

The truth is, that the causes of the prevailing love for

¹ Ludwig Ritter.

old china lie both deep and wide. To the antiquary, to the student of past history, there is this attraction in the ceramic art, that its productions more perfectly adapt themselves to the fashion of thought, to the fancies and ideas of each successive generation of men, than those of any other human industry.

Pottery owes nothing of its beauty or its serviceableness to its material, — for that is but the dust beneath our feet, — and every thing to the hand that fashions it, and to the mind that directs the hand ; so is it that it comes to have so purely human an interest : it is a bit of man's work, with no adventitious aid whatever. If the form is beautiful, or quaint, or ugly, or commonplace, it is that the plastic clay has followed, and exactly reproduced, the conception in the maker's mind : it is formless, without coherence, and all but colorless ; it takes the form, and the consistency, and the color, that are ideal with the man who transforms the gray earth into a piece of pottery ; and, when he has done this, his handiwork lasts forever.

Coins rust with time ; statues of marble and bronze crumble, or are corroded ; inscriptions are obliterated ; stone walls fall to the earth ; and the Pyramids themselves are slowly disappearing. Every monument that mankind have thought most lasting yields to time, except the work of the potter.

The most frail of man's productions is yet the most

permanent. The glorious tints on the majolica ware are still as bright as when they were drawn from the kiln ; while the pictures of Raphael and Leonardo, painted in the same generation, are already fading. We have perfect specimens of Greek pottery that cannot be of a later date than a thousand years before the Christian era. Glazed mural tiles have been discovered among the ruins of Babylonian palaces, still bright enough to decorate a king's chamber ; and in the catacombs of Egypt are found glazed figures of Ra, the sun god of Anubis, and of the sacred Scarabæus, as pure and brilliant in color as the latest production of Deck or Minton.

While this permanence, and the peculiar plasticity of its material, make the study of ancient pottery indispensable to the archæologist, and interesting to every intelligent person, its potentiality for extreme beauty of form and color recommend it to all who possess any degree whatever of æsthetic appreciation.

In regard to form-beauty, it is enough to mention the exquisite proportion of the classical vases, amphoræ, and cylices, the rich and various shapes of early Italian wares, and the more learnedly elaborated forms of the pottery of the Renaissance period ; and of color it is enough to say that the precious imperial red of ancient China vies with the ruby in brilliancy and depth ; the blue of the turquoise is exactly repeated on

the blue crackle ware of China ; while the pink and dark blue of the *Rose du Barry* and the *Bleu de Roi* of Sèvres, the rare Chinese apple-green, the exquisite tints on the ancient wares of Persia and Japan, are hardly equalled in the various qualities of depth, intensity, brilliancy, and tenderness, by any colors in nature or in art.

The production of each one of these hues is a past triumph of invention and of applied science ; and in the history of pottery is bound up the strong human interest furnished by the lives of the men who have advanced the art, — the Della Robbias, the Palissys, and the Wedgwoods, — men of science, artists, inventors, and endowed with the care, patience, energy, and devotion of true genius.

Such being the attractions afforded by the study of the ceramic art, it is no wonder that it is popular, and that its popularity increases with the intelligence of the age.

If it were allowable to cite names, those of many foremost statesmen at home and abroad, of many great lawyers, of many men eminent in letters, and of many of our first artists, might be given as lovers and students of ancient and mediæval pottery. Mr. Gladstone at least may be quoted among the list, since he has not scrupled in a public speech to avow himself a keen amateur of fictile ware : the right honorable gentleman

indeed is well known to be an enthusiastic and discriminating collector of the wares of Wedgwood and Northern Italy.

Whether we have any leaning or not towards the ceramic art, whether we really care for it or do not, it is the fashion to know something about old pottery. It has got to be a mark of inculture to be wholly ignorant; and to have at least read up "Marryat" or "Chaffers" has almost become part of a liberal education.

We here present our readers copies of forty designs which were used by Josiah Wedgwood in the decoration of porcelain.

They are such as he found by experience to be the most satisfactory.

Many of them were taken without alteration from Greek vases of the best period.

Others are modifications of Egyptian forms.

Some were designed in Italy and Germany, and sent to him to be used in the decoration of special orders.¹

No. 1. — The vine in light blue; ground, white; outer border, background, and curved lines in brown.

No. 2. — The broad band, upon which is painted the forget-me-not, is a light buff; the flowers, natural color of deep blue; leaves, stem, and narrow bands, brown; the palm-branch, light green.

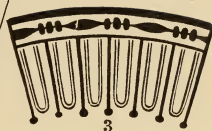
¹ For other designs and instruction, see Greek Ornament as applied to Pottery Decoration, which may be had from the publishers of this book.



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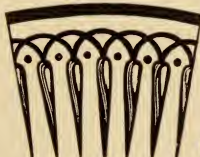
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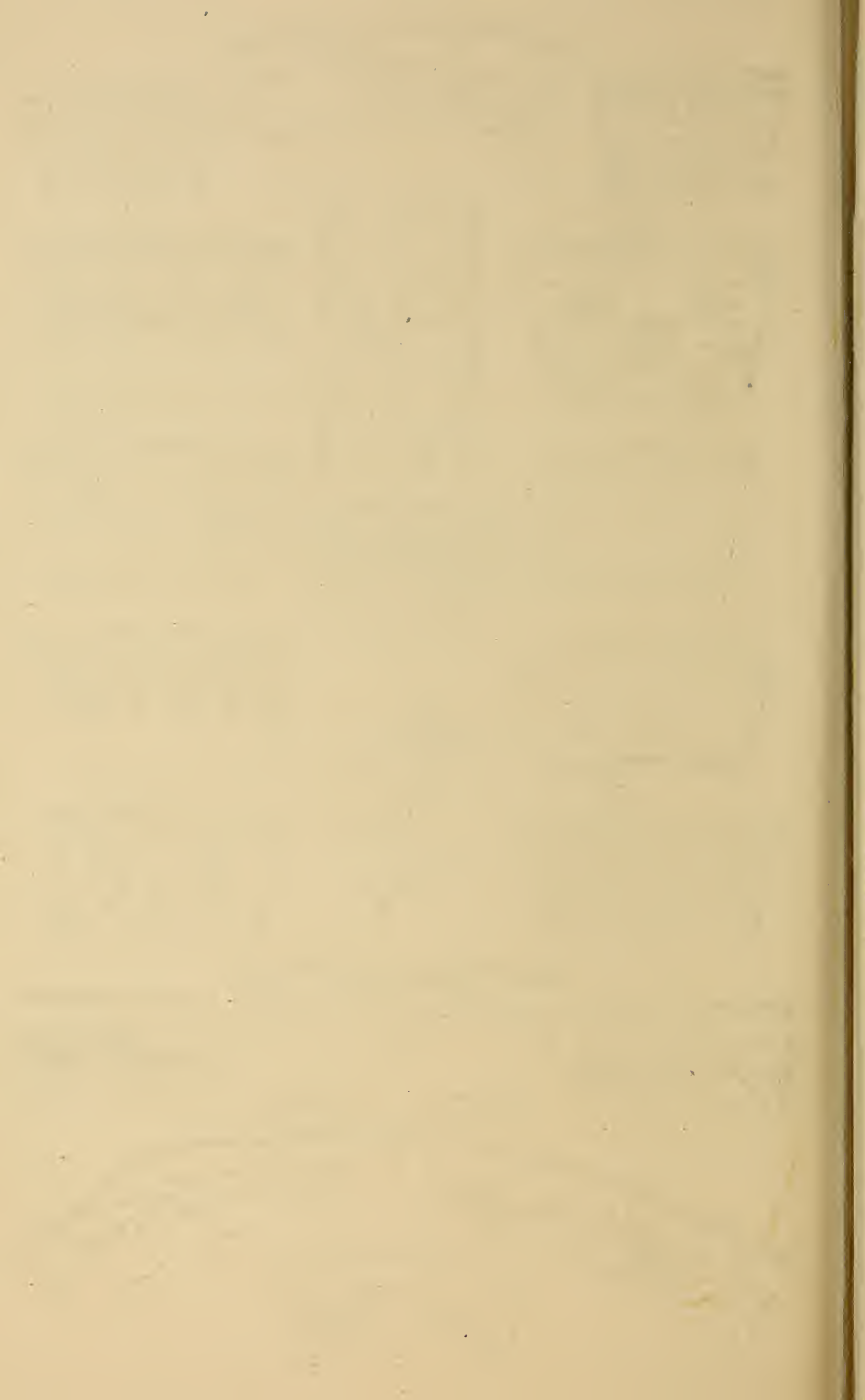
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20



19



No. 3. — A favorite pattern, varied but little from the Greek ; the outer portion being the astragal, or bead-and-button moulding, the inner the egg-and-dart, or tongue moulding, — all black except the egg, which is light green.

No. 4. — The quatrefoil of leaves is to be light red, all else black.

No. 5. — Broad bands, brown ; stems and leaves, green, shaded brown ; flowers, blue.

No. 6. — Outer band, light green ; inner, pale yellow ; wave-lines, brown ; wheat, light yellow ; the white dots of the engraving color, brown.

No. 7. — The ground in which the dots appear is pink. What is black in the engraving should be brown in the object.

No. 8. — A very light grayish-blue for all that is black in the engraving ; the half-tint is a graded shade of brown, for relief.

No. 9. — Same as No. 5.

No. 10. — All brown : a very pleasing pattern.

No. 11. — Colored like No. 8.

No. 12. — Outer band, purple ; ground for dots, green ; curved lines and drops, pink ; leaves, green.

No. 13. — Same as engraving, except a deep-red ground for the meander or fret.

No. 14. — The ovoid or shield for the anthemion, dark red ; all else black.

No. 15. — Outer band, brown ; larger leaves, light green ; flowers and spray, pink.

No. 16. — All brown : favorite design.

No. 17. — Outer band, brown ; ground, lemon-yellow ; leaves and spray same as outer band ; flowers, pink.

No. 18. — Outer band and design, brown on lemon-yellow ground.

No. 19. — Outer band and design, light blue on dark-red ground.

No. 20. — Bands and stems, brown ; leaves, green, shaded brown.

No. 21. — All brown : very pleasing.

No. 22. — Variation of Egyptian lotus-bud. Ground, black ; stems, and shaded portion of buds, brown.

No. 23. — Vermicelli pattern. Ground, light stippled brown ; bands, dark brown ; design, black.

No. 24. — Same in color as 21.

No. 25. — Ground, black ; central line and half-tint, shading brown.

No. 26. — Same as No. 9.

Nos. 27 and 29. — Greek. Colors same as in Nos. 13 and 14.

No. 28. — What is black in pattern make a golden brown.

Nos. 30 and 32. — Greek. Black figures upon a russet ground.

No. 31. — Light portion of leaves, yellow ; shaded portion and bands, brown.



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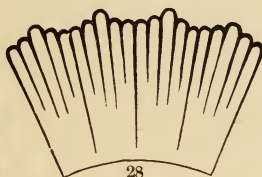
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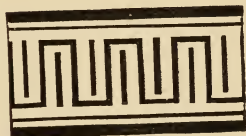
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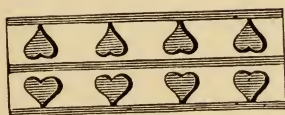
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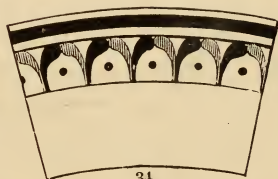
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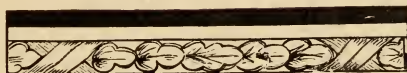
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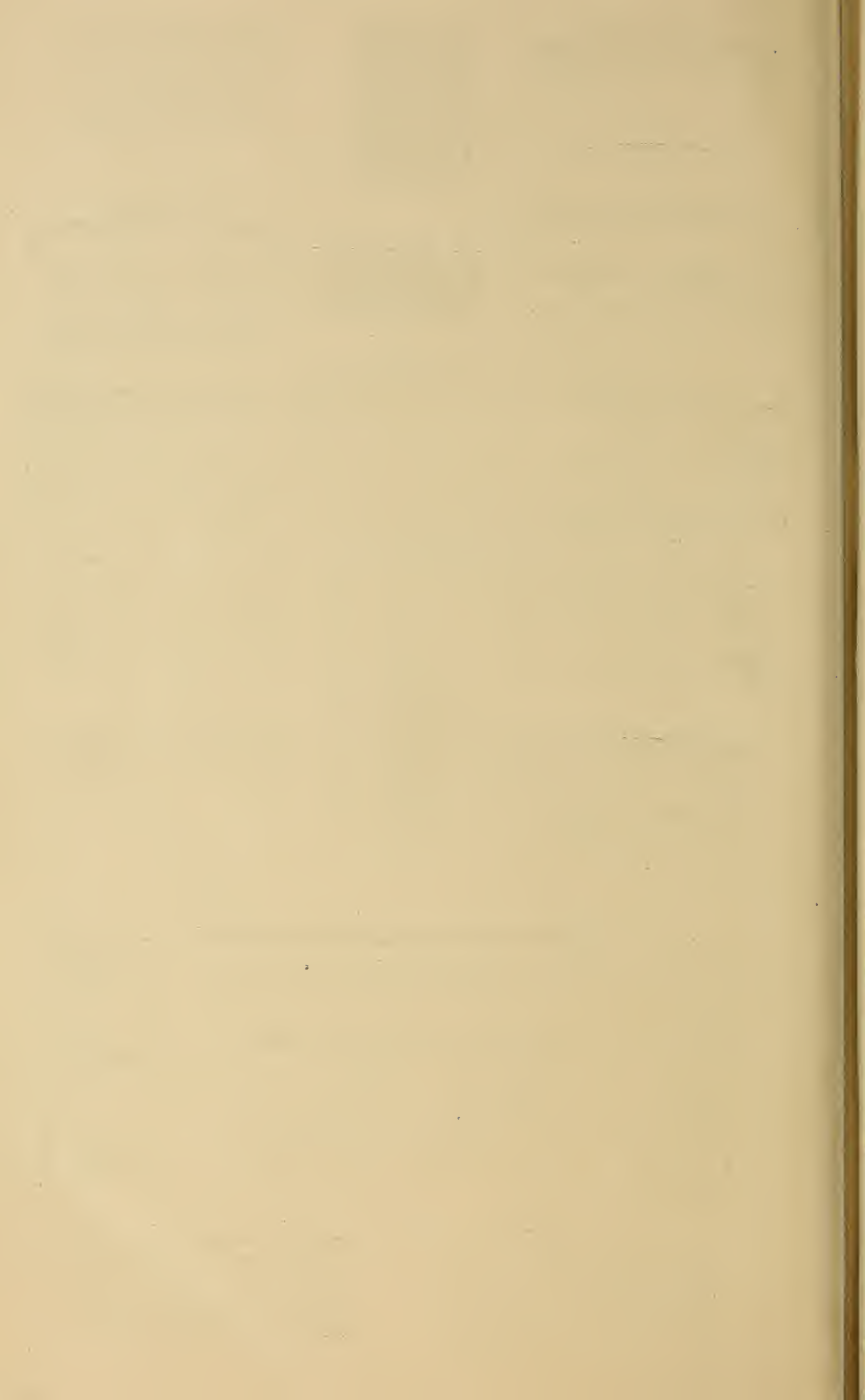
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No. 33. — Bands, design, and dots, brown upon lemon ground.

No. 34. — The black, same as in pattern ; the half-tint, green on a buff ground.

No. 35. — Outer band, brown ; leaves, green on green ground, but outlined and slightly shaded in brown ; ribbons, pink.

No. 37. — Brown design on deep-yellow ground.

Nos. 36, 38, 39, 40. — All Greek patterns. Black upon red ground.

The above-described combinations of color are as given by Wedgwood : they can be varied to suit the taste of the decorator.

COLORS.

The nature of colors used for pottery painting of all kinds may be understood thus : If a mixture of sand, borax, soda, and lead, be made, it will be a glaze, as already explained : if it be made so soft as to fuse at a comparatively low temperature, it is called "flux." If "flux " be mixed with any earth, or oxide of a metal, such as rust, that is not destroyed by heat, it will make a color with which a china-painter could work with the certainty of his work coming out of the kiln glossy, and fixed by the heat.

Therefore, as a general rule, colors are formed of infusible bases mixed with a flux, the hardness of

which usually regulates the intensity or mildness of the fire which is used for their fusion.

As these colors may be procured all prepared, either in powder or already mixed for use, it is hardly necessary to give recipes for their manufacture, which can be obtained from the various works on the subject.

All these colors must fulfil certain conditions indispensable to their use.

1. They must be fusible at a certain known temperature; they must be unchanged at this temperature.
2. They must adhere closely and intimately to the body on which they are placed.
3. They must present a glossy appearance after they are fired.
4. They must be so perfectly fused as to be impervious to air, water, or gases.
5. They must have the same measure of dilatation that the ware and the glaze have, on or under which they are placed.

It is always necessary to have a color more fusible than the body or the glaze with which it has to be incorporated; and although, in general, there is a considerable difference between them, as is the case with porcelain bodies, glazes, and their colors, yet sometimes it is a matter of very delicate adjustment; for instance, in the case of enamel-painting on glass, used to decorate the better class of Bohemian wares.

In the case of soft bodies, as in some kinds of porcelain and faïence, the difference is not so great; and some ordinary care should be exercised to guard against the use of hard color on a soft glaze.

The hardness of the glaze and the colors is a question of utility. It is found convenient to have a sufficient degree of hardness to enable the surface to resist the scratching or chipping that may be the result of contact with harder bodies than themselves.

The equal dilatation of the colors is a very important condition. It equally applies to the glaze and the body; for it is obvious, that if the body in cooling, after it is fired in the glaze-kiln, shrink more than the glaze that should exactly fit it, the glaze is broken ridgeways in crackle lines. More generally "craze," or crackle, is the product of a glaze that shrinks more than the body. In this case, small interstices are left in the substance of the glaze, to the serious deterioration of the appearance and durability of the vessel.

This is a matter that must be left to the potter; and it is usually the case that the colors are practically fitting to the bodies.

These vitrifiable colors may be arranged under four different heads:—

1. Metallic oxides, forming the most numerous and important class.

2. Earths, white, or colored by metallic oxides.
These are, in general, body colors; do not glaze by themselves, but receive gloss from the glaze which covers them.
3. Metals in their simplest conditions: they are applied in films, and recover their brightness by being polished.
4. Lustres, which are metals in a state of finest separation or disunion; so that they even reflect prismatic colors.

There are two methods of obtaining colors from the metallic oxides; by one of these the oxide, such as that of copper and cobalt, unites chemically with the flux when it is fused, and forms a homogeneous compound.

With others, on the contrary, the flux is only a vehicle which envelops the coloring-matter, and fixes it on to the body.

The colors are composed of various silicates or aluminates or oxides of various metals, and may be arranged under the following general heads: —

BLUES are almost all procured from cobalt, which is used in two conditions, — one as silicate, when it produces dark blue, which is heightened or subdued by mixture with zinc, sodium, or potash, and may be thus varied to indigo or gray-blue. In its other condition, as aluminate, co-

balt produces various shades of blue, green, ultramarine, or turquoise, and, by admixture with iron, gives various tints, varying from light gray to black.

YELLOWS are obtained principally from antimony, zinc, and iron, as oxides are added to qualify and vary the natural color.

GREENS are obtained from chromium, which is modified by cobalt and alumina.

REDS are iron colors, oxides of various degrees.

BROWNS are formed from cobalt and iron in different relations of combination, modified towards ochre and yellow brown by zinc.

BLACKS are obtained from cobalt and iron: these are intensified with copper and manganese.

WHITES are usually enamels of tin: phosphate of lime is less generally used.

PURPLE, VIOLET, and CARMINE are obtained from gold and tin, known under the old name of "purple of Cassius." It is modified by silver to obtain the carmine tones.

These colors, as already mentioned, are so qualified by the flux with which they are mixed, as to be available for various applications to different bodies, and to fuse at different temperatures.

It may be roughly assumed that there are three stages of heat, which are called "ordinary muffle

heat," "hard kiln," and "gloss oven heat ;" and, as an assistance to those who may use French colors, the grouping of M. Salvétat, head of the chemical department at Sèvres, is appended. The French names are merely translated, and do not necessarily apply to the colors obtained from English manufacturers.

1. Colors for ordinary muffle :—

Whites.

Blanc fixé (permanent
white).

Blanc Chinois (Chinese
white).

This latter white will mix with all other colors, and give them opacity and body.

Grays.

Gris tendre (light gray).

Gris bleuâtre (blue gray).

Gris roussâtre (russet gray).

Bleu turquoise.

Bleu d'azur.

Bleu de ciel (sky blue).

Bleu d'outremer (ultramarine blue).

Blacks.

Noir grisâtre (gray black).

Noir brunâtre (brown
black).

Noir d'iridium (black).

Greens.

Vert bleuâtre (blue green).

Vert de pré (meadow green).

Vert foncé dur (deep green).

Vert foncé tendre (deep
green).

Blues.

Bleu foncé ou d'indigo (deep
or indigo blue).

Vert brun (brown green).

<i>Yellows.</i>	<i>Brun de bois</i> (wood brown).
<i>Faune pâle fixé</i> (permanent pale yellow).	<i>Brun sépia</i> (sepia brown).
<i>Faune clair</i> (light yellow).	<i>Reds.</i>
<i>Faune foncé</i> (deep yellow).	<i>Rouge orangé</i> (orange red).
<i>Faune pâle pour les chairs</i> (pale yellow, for flesh).	<i>Rouge de chair</i> (flesh red).
<i>Faune orangé</i> (orange yellow).	<i>Rouge carminé</i> (carmine red).
<i>Yellow browns.</i>	<i>Rouge sanguin</i> (blood red).
<i>Faune d'ocre pâle</i> (pale yellow brown).	<i>Purples, Carmines, and Violets.</i>
<i>Faune d'ocre foncé</i> (deep yellow brown).	<i>Carminé dur</i> (hard carmine).
<i>Browns.</i>	<i>Carminé tendre.</i>
<i>Rouge brun</i> (red brown).	<i>Pourpre.</i>
<i>Brun roussâtre</i> (russet brown).	<i>Violet.</i>

2. The colors for medium heat are the same in name, but are rendered much harder, and capable of bearing a much stronger heat, by having in their composition a larger proportion of one or more of the oxides.

The decorator must not use the colors for medium heat, or for the light heat of the ordinary muffle, until the second firing. Gold and the colors for light fires are wasted by being put through the hard fire.

3. Colors for greatest heat : —

<i>Blacks.</i>	<i>Vert céladon.</i>
<i>Noir de poix.</i>	
<i>Noir bleuâtre.</i>	<i>Yellow.</i>
	<i>Faune de paille.</i>
<i>Gray.</i>	
<i>Gris de fumée.</i>	<i>Rose.</i>
	<i>Rose Isabelle.</i>
<i>Blues.</i>	
<i>Bleu indigo.</i>	<i>Brown.</i>
<i>Bleu d'azur.</i>	<i>Brun roussâtre dit écaille</i>
<i>Bleu pâle.</i>	<i>(tortoise-shell).</i>
<i>Bleu verdâtre et bleuâtre.</i>	<i>Laque rougeâtre ou bistre.</i>
<i>Bleu turquoise.</i>	<i>Brun marron (maroon).</i>
<i>Greens.</i>	
<i>Vert émeraude.</i>	

English colors have very nearly the same value, as to their hardness, as the French, and are, in general, of similar power as pigments.

The following list is extracted from the colors used in the Royal Pottery Works at Worcester.

In all cases, it is to be advised to the painter to make a test tile, or plate, by putting a small portion of his colors, whether French or English, on to a piece of ware,

in any order that may seem useful, and then to have it fixed in the kiln in which his finished work will be fused. This will give him a standard of comparison, which will be most useful.

The most usual method of setting such a test palette is to divide the rim of the plate, or length of the tile, into a number of small divisions, and then to paint in the first set all the different yellows and their combinations, then red and their combinations, then blue, then brown, and, finally, black.

WORCESTER COLORS.

For Enamel Painting.

Blue . . Azure.	Green . . Rose-leaf.
“ . . Mat.	“ . . Dover.
“ . . For old tile painting.	Gold . . (Prepared ready for grinding).
Brown . . Brunswick.	Maroon.
“ . . Vandyke.	Orange . . Light.
“ . . Chocolate.	“ . . Dark.
“ . . Golden.	Pink.
Black . . Soft.	Purple . . Royal.
“ . . Jet.	“ . . Ordinary.
“ . . Shining.	Rose.
Carmine.	Red.
Green . . Blue.	Scarlet.

Silver . .	(Double pre-	White	} Soft.
	pared, ready	Enamel	
	for grinding.	" .	Medium.
Turquoise	Imperial.	" .	Hard.
" .	Outremer.	Yellow .	Persian.
" .	Blue.	" . .	Hard.
Violet.		" . .	Opaque.

Colors for Under Glaze Painting.

Blue . .	Mat.	Dove.	
“ . .	Ultramarine.	Green . .	Blue.
“ . .	Azure.	“ . .	French.
Brown . .	Claret.	“ . .	Victoria.
“ . .	Vandyke.	Orange.	
“ . .	Chestnut.	Pink.	
“ . .	Dark.	Purple.	
Black.		Turquoise.	
Buff.		Yellow.	
Crimson.			

The metals are used in their simple condition by mechanical disunion being effected by grinding, or by dissolution in acid, from which they are precipitated. The brownish powder thus obtained is treated in all respects as a pigment, ground fine on the slab, and used with the brush with the usual medium. It is fired, and afterwards burnished.

The metals most commonly used are gold, silver, more seldom platina, and most rarely copper.

This method of applying metallic colors is called gilding, and is a perfectly distinct thing from the metallic appearance obtained from a "lustre." In this beautiful decoration, the particles of metal are so thinly spread as to become iridescent; and the metallic sheen is independent of any rubbing, burnishing, or polishing, but is the pure product of the kiln.

There are several kinds of metallic lustre produced from gold, silver, copper, and platina. In the case of gold, the metal is dissolved and precipitated, and mixed with turpentine, and, without the addition of flux, is spread with a brush on the glaze of the pottery, much the same as color. When fired in a muffle, it adheres to the piece, and shines with a bright metallic lustre, which may be somewhat increased by friction with a cloth. Platina lustre is prepared in much the same manner, giving its shady, silvery shine as the result of its firing. Mother-of-pearl lustre, or lustre of Burgos, has the changing rosy and yellow hues that are seen on many shells. It is transparent, but, mixing with the glaze on which it is spread, takes various and most beautiful colors. Sulphur, gold, and potash are the materials from which it is made: it is sometimes seen with circular spots or patches of shining pure gold in tints. These are produced by a simple manip-

ulation. For hard porcelain, lustre is mixed with flux, and spread evenly, and as finely as possible, over the surface of the china. When it is still soft, — that is, before it is dry, but after it is set, — drops of spirit are scattered on it; or spirit is sprinkled. These drops spread themselves around, dragging with them the lustre, which takes the form of rings; and the material, being much thicker here than elsewhere, shows the gold in its brightness not only as an iridescent film; and, as metallic gold is here present, the spots are increased in brightness by rubbing with a cloth.

Copper lustre is not dissimilar in appearance; but it is usually more purple in tone. It is seen in its perfection in the wares of the Moors of Spain, in the pieces called Hispano-Moorish. Their wares have been unapproached, until Mr. De Morgan took up the subject, a short time since. His lustres now vie with, if they do not surpass, those of the old examples.

The lustre cantharis is but seldom used, in spite of its brilliant colors, as the manipulation is very complicated and difficult. It is formed from lead glaze, bismuth, and silver; and the difficult part of the firing process is, that, when the piece is hot, it must be exposed to the smoke and vapor of burning vegetables or animal substance. It takes green, reddish yellow, and blue tints. The dangers of the old method of

smoking the piece while red-hot, by removing it from the kiln for the purpose, led to the abandonment of the process. It is believed that the old methods all included the exposure to the influence of thick wood-smoke of the piece while still hot in the muffle. The lustre of lead, or litharge, gives yellow, blue, and green, with yellow predominating. It is seen on common wares from Germany, and occasionally is produced in this country.

The whole range of lustre-ware is one that does not come into the amateur's province. The processes for the production of the pigment itself are too complicated, and the difficulties of firing and developing the sheen of the metal far too risky and uncertain, not only for the amateur, but also, it is feared, even for the potter, to allow these beautiful wares being produced in large quantities. Mr. De Morgan has made the most perfect lustres of the modern age, but only after many losses, and after much disappointment.

It is assumed that the china-painter will be provided with colors, — either those already named, and put into tubes, or with the powder colors. These are supplied in powder, which has been rendered almost impalpable by thorough grinding and sifting; but in the course of packing, and by the mere effect of lying closely together, the particles stick together so as to seem almost gritty, or imperfectly ground.

This grittiness is perfectly removed by grinding the powder color again on the slab with a muller, with water. When perfectly fine again, let the color be put in ridges on a slab, or a piece of glass, to dry. Then the colors may be mixed at once with medium, and used on the ware with no further difficulty.

MATERIALS REQUIRED FOR CHINA AND TILE PAINTING.

WE should recommend the colors which may be obtained in tubes, prepared and ready for immediate use ; and, for the convenience of the beginner, we here present two lists of articles used in china and tile decoration. Box No. 1 contains only articles absolutely necessary ; while box No. 2 is more liberally supplied with colors which it will be found convenient to have. These boxes may be had in full or in part of the publishers of this book, who will supply all materials required in china or pottery decoration.

LIST NO. 1 OF ARTICLES REQUIRED FOR CHINA PAINTING.

A glass palette	\$0.70	<i>Colors.</i>	
A palette-knife . . . .	.30	Carmine No. 2	\$0.45
A bottle of fat turpentine . . . .	.30	Deep blue . . . . .	.30
A bottle of spirits of turpentine . . . . .	.30	Mixing yellow . . . . .	.30
A bottle of lavender-oil . . . .	.35	Red capucine . . . . .	.30
		Purple No. 2 . . . . .	.60
		Yellow brown . . . . .	.30
<i>Brushes.</i>		Bitumen . . . . .	.30
Three fine-pointed camel's hair, for sketching or outlining the design, at 5 cts. . . . .	.15	Black . . . . .	.30
Two of different medium sizes, for laying in the first washes of color, at 10 cts. . . . .	.20	Chrome green . . . . .	.30
Two shaders, at 10 cts. . . .	.20	Violet	
One softener . . . . .	.20	Silver yellow . . . . .	.30
		Orange yellow . . . . .	.30
		Celadon . . . . .	.30
		Impression or transfer paper . . . . .	.10
		Tracing paper . . . . .	.10

A box containing all of the above, \$6.

LIST No. 2.

		<i>Colors.</i>
Glass palette	\$0.70	
" " larger . . . . .	.85	Chinese white \$0.30
Two palette-knives, 30 cts.,		Dark blue30
40 cts. . . . .	.70	Ultramarine blue45
Bottle of fat turpentine . .	.30	Yellow brown30
Bottle of spirits turpen-		Sepia30
tine . . . . .	.30	Bitumen30
Lavender-oil . . . . .	.30	Red brown30
		Carmin No. 130
		" No. 230
		" No. 345
<i>Brushes.</i>		Gray No. 230
Six fine-pointed camel's		Silver yellow30
hair, for sketching or		Orange yellow30
outlining the design, at		Ivory yellow30
5 cts. . . . .	.30	Mixing yellow30
Four of different medium		Ivory black30
sizes, for laying in the		Purple No. 260
first washes of color, at		Capucine red30
10 cts. . . . .	.40	Grass green30
Four shaders . . . . .	.40	Apple green30
A softener . . . . .	.20	Chrome green30
Impression or transfer pa-		Violet of gold, light . . .60
per . . . . .	.10	" " iron30
Tracing paper . . . . .	.10	Celadon30

A box containing all of the above, \$11.00.

COLOR FOR GROUNDS OR TINTS.

Salmon . . . . .	.30	Lavender blue . . . . .	.30
Turquoise blue . . . . .	.45	Mais . . . . .	.30
Coral red . . . . .	.30	Café au lait . . . . .	.30
Celeste . . . . .	.45	Water green (Vert d'eau),	.30

We have omitted gold, which is used principally for lining and touching up. It will be more economical to have it put on by the party who does the firing.¹

¹ Firing done twice a week, by Theodore Walter, 16 Newton Place, Boston.

PRICE-LIST OF TILES FOR DECORATION.

<i>Six Inches Square.</i>			
White	\$0.20 each	Yellow	\$0.25 each
Cream color or ivory .20	"	Green . . . . .	.25 "
Turquoise . . . . .	.25 "	Octagon white . . . . .	.20 "
Red . . . . .	.25 "	<i>Seven Inches Square.</i>	
Chocolate . . . . .	.25 "	White . . . . .	.30 "
White . . . . .	.25 "	Ivory . . . . .	.30 "

Also, black, buff, red, and drab unglazed tiles, 6 inches square, for oil colors, 15 cts.

<i>Eight Inches Square.</i>		<i>Porcelain Placques.</i>	
White	\$0.40 each	4 inches by 6 inches .	\$0.40 each
Ivory . . . . .	.40 "	5 inches by 10 inches	0.50 "
		10 inches by 12 inches	
		(heavy)	1.50 "
		12 inches square . . .	2.50 "
<i>Six Inches Square.</i>		<i>Long Placques.</i>	
White, round-cornered .35	"	6 inches by 12 inches	2.00 "
*Green, buff, and brown,		6 inches by 18 inches	3.50 "
in imitation of leather .35	"	8 inches by 30 inches	7.50 "
Round tiles, white (8 in) .60	"		

* For either oil or mineral colors.

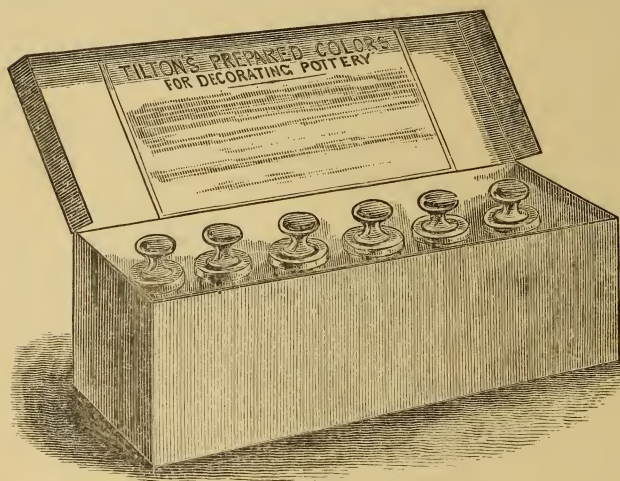
We can furnish tiles 3 inches square, 6 by 3 inches, and any other sizes, at same rate.

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